

EA



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/650,658	08/28/2003	Duncan L. MacFarlane	119941-1096	7272

7590 09/21/2005

Gardere Wynne Sewell LLP
Suite 3000
3000 Thanksgiving Tower
1601 Elm Street
Dallas, TX 75201-4767

EXAMINER

HUGHES, DEANDRA M

ART UNIT	PAPER NUMBER
----------	--------------

3663

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

KL

Office Action Summary	Application No.	Applicant(s)	
	10/650,658	MACFARLANE, DUNCAN L.	
	Examiner	Art Unit	
	Deandra M. Hughes	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-36 is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

he

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1-7 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Numai (1.5 μ m tunable wavelength filter using a phase-shift-controlled distributed feedback laser diode with a wide tuning range and a high constant gain, 1989) in view of Bhatia (US 6,552,834 filed Feb. 15, 2001).

With regard to claim 1, Numai discloses an active optical filter comprising:

- a filter input component disposed to receive an optical input signal (fig. 1, input arrow);
- a filter output component disposed to provide a filtered output signal (output arrow);
- an optical amplifier (Active Sections);
- at least one optical delay element (phase control section);
- a surface grating coupler positioned between said optical amplifier and each of said delay elements to form a first light transmission path; (pg. 1859, col. 1, 2nd paragraph, lines 7-11; the etched grooves are the gratings and note that 'each section is electrically isolated from each other by the grooves).

Further, the Examiner considers the semiconductor substrate of Numai to be a surface emitter photonic integrated circuit.

Numai does not specifically claim the light transmission paths. However, the tunable filter is intended to WDM systems (pg. 1859; col. 1, lines 1-2). Further, Bhatia teaches filters in two light transmission paths (fig. 4) wherein the first light transmission path (from circulator #310b to #324b) has an end coupled to said filter input component and another end coupled to said filter output component (e.g., filter #318) and a second light transmission path (from #310c to #324a) disposed to transmit optical signals without delay from said filter input component to said filter output component. It would have been obvious to one of ordinary skill in the art (e.g., an optical engineer) to apply the tunable filter of Numai in the transmission system of Bhatia for the advantage of dropping unwanted transmission channels.

With regard to claim 2, the 2nd transmission path of Bhatia couples the input and output ends of the filter component to the input and output ends of the 1st transmission line via the circulators (#310 and #324). Further, due to the laser cavity formed by the gratings, the Examiner considers the pulse of λ_1 to be an IIR (Numai; pg. 1860, col. 1, lines 20-24).

With regard to claims 3-4 and 6-7, two tunable active filters may be placed in the transmission paths of Bhatia (#318 and #320). Consequently, a second delay element is disclosed (#320 would have a second instance of the phase control element).

With regard to claim 5, the Examiner considers the pulse of λ to be a FIR (Numai; pg. 1860, col. 1, lines 20-24).

With regard to claim 8, the Examiner considers the semiconductor substrate of Numai to be a surface emitter photonic integrated circuit.

Art Unit: 3663

With regard to claims 11-12, fig. 2 of Numai discloses the specified transmission wavelengths or bandwidth, which is merely the inverse of frequency.

3. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Numai in view of Bhatia as applied to claim 1 above, and further in view of Hamada (US 2003/0180023 filed Dec. 12, 2002).

Numai in view of Bhatia does not specifically disclose a surface grating comprising a crystal. However, Hamada teaches the manufacture of gratings with photonic crystals (paragraph [0017]). It would have been obvious to one of ordinary skill in the art (e.g., an optical engineer) to manufacture a grating with photonic crystals for the advantage of wavelength tunability.

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Numai in view of Bhatia as applied to claim 1 above, and further in view of Shaw (US 6,456,766 published Sep. 24, 2002).

Numai in view of Bhatia does not specifically disclose a surface grating comprising trench coupler. However, Shaw teaches surface gratings comprising trench couplers (fig. 25). It would have been obvious to one of ordinary skill in the art (e.g., an optical engineer) to use a surface grating comprising a trench coupler for the advantage of maintaining optical alignment.

Allowable Subject Matter

5. Claims 13-36 are allowed.

Specification

6. The amendment to the abstract has been accepted.

Drawings

7. The replacement drawings filed 7/11/05 have been accepted.

Response to Arguments

8. Applicant's arguments filed 7/11/05 have been fully considered but they are not persuasive.

Applicant argues the following:

- (A) Neither Numai or Bhatia references, taken individually or in combination, teach or make obvious, an active optical filter comprising a surface grating coupler having a grating surface emitter photonic integrated circuit as required by claim 1. (pg. 14, lines 3-7).
 - (B) There is no motivation to combine Numai and Bhatia (pg 14, lines 9-10).
 - (C) Neither Numai, Bhatia, or Hamada references, taken individually or in combination teach or make obvious an active optical filter of Claim 1 comprising a photonic crystal, as required by claim 9. (pg. 15, lines 14-16).
 - (D) There is no motivation to combine Numai, Bhatia, and Hamada. (pg. 14, line 17).
9. With regard to Arguments (A) and (C), Applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the

Art Unit: 3663

references cited or the objections made. Further, they do not show how the amendments avoid such references or objections.

10. With regard to Arguments (B) and (D), the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case of Argument (A), Bhatia clearly discloses the motivation to combine, namely, dropping unwanted transmission channels. Bhatia's entire patent is directed towards the end of dropping unwanted transmission channels.

In the case of Argument (B), the motivation to combine is found in knowledge generally available to one of ordinary skill in the art, namely, the wavelength tunability of photonic crystal gratings.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not


Art Unit: 3663

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deandra M. Hughes whose telephone number is 571-272-6982. The examiner can normally be reached on M-F, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Deandra M. Hughes
Examiner
Art Unit 3663